

AUG 21 2007

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Yasuhiko OKI, et al.

Serial No.: 10/533,731 Group No.: 1755

Filed: October 27, 2005

Examiner: Helene G. Klemanski

For: INK COMPOSITION, INK JET RECORDING METHOD AND RECORDED ARTICLE

Attorney Docket No.: U 015750-6

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

DECLARATION UNDER 37 CFR 1.132*I, Yasuhiko Oki, hereby declare as follows:*

1. I am a co-inventor of the invention described and claimed in the above application. I make this declaration in support of the application.
2. The following experimentation was done by me or under my supervision and control and I have first hand knowledge of the results described below.
3. Additional test A

Ink compositions of examples 14-17, comparative examples 10 and 11, and example 1 were prepared in the mixing proportions shown in Table 5 according to the first preferable form of the present invention.

A printed article was prepared using each of the ink compositions described in examples 14-17, comparative examples 10 and 11, and example 1 according to the first preferable form of the present invention, and those printed articles are evaluated for ozone resistance, nitrogen oxide resistance, and clogging resistance. In this test, three exposure times, i.e., six hours, 12 hours, and 24 hours, were provided for ozone resistance evaluation, and two non-use periods (for which the printer was left unused), i.e., two weeks and one month, are provided for clogging resistance evaluation.

The obtained evaluation results are shown in Table 6.

4. Additional test B

Ink compositions of example 18 and example 9 were prepared in the mixing proportions shown in Table 7 according to the second preferable form of the present invention.

A printed article is prepared using each of the ink compositions described in example 18 and example 9 according to the second preferable form of the present invention, and those printed articles were evaluated for ozone resistance, nitrogen oxide resistance, and clogging resistance. In this test, two non-use periods (for which the printer was left unused), that is, two weeks and one month, are provided for clogging resistance evaluation. The obtained evaluation results are shown in Table 8.

The results of example 14 and comparative example 1, example 15 and comparative example 10, and example 18 and example 9 show that Na salt exhibits poor recoverability when the printer is left unused for longer periods, while Li salt maintains good recoverability even when the printer is left unused for longer periods. It is evident from the comparison with comparative example 11 that in comparative example 10, clogging resistance is lowered by the addition of an additive, and it can easily be judged from the results of example 15, comparative example 10, and comparative example 11 that Li salt is effective in improving ozone resistance while maintaining this good clogging resistance.

Table 5

Colorant	C.I. Direct Blue 188(1)	Example					Osmotically Exempt
		14	15	16	17	Ex	
Solvent etc. (Glycol)		1	3	0.5	0.5	10	11
Trithylene glycol		10	3	3	3	10	3
2-Pyrrolidone		10	16	16	10	10	
1,4-Dioxane		1	0.5	0.5	0.5	1	
Diethylene glycol monobutyl ether		0.5	0.5	0.5	0.5	1	
Triethylene glycol monobutyl ether		10	12	12	10	10	
Other E(10102)		1	1	1	1	1	
Propylene glycol		10	12	12	10	10	
1,2-Glycerol		1	0.5	0.5	0.5	1	
Urea		7	6	6	7	7	
Additives							
Diethylene triamine-1,3-diaminopropane		6	7	7	7	7	
Diethylene triamine-1,3-diaminopropane 10% water solution		30	20	3	6	6	
Flame retardant		(3)	(2)			2	
Bisphenol benzene-1,3-diaminopropane 10% water solution		5	1				
Figure 10 percentages indicates weight content.							
Proxol X-2(4)							
Water		0.5	0.5	0.5	0.5	0.5	
Ratio between colorant and aromatic sulfonate salt/sulfonate	1.2	3.2	Remainder	1.1	1.2	1.3	Remainder

*:Coherent having absorption wavelength as shown in Fig. 1 was
*Made by Nizam Optics Co. Ltd.
*Made by Arcoa Ltd.

Table 7

	Experiments	Comparative
	18	Experiments Expt
Colorant	O.I. Direct Blue 86(4)	
Solvent & other Chemical		
Tetrahydro glycol		5
Tetrahydro thalimine		5
Tetrahydro phthalimide		5
O.I. Blue 80(2)		10
Additives		10
Dioctyl phthalate-2,6-diisopropylate		1
Dithiobenzene-2,3-diisopropylate		4
Water solution	40	
Others		
Praxel X-2(4)	(4)	
Water	0.3	0.3
Ratio between colorant and aromatic sulfonic acid/sulfonate	14	14

*All Colorant having absorption wavelengths as shown in FIG. 2 used
#51-Made by Nalni Chemical Industry Co. Ltd.
#52-Made by Avacha Ltd.

Table 5

		Ozone Resistance			NO _x Resistance		Cleaving Resistance	
		6 Hours	12 Hours	24 Hours	6 Hours	12 Hours	2 Weeks	1 Month
Examples	14	A	A	B	A	A	A	B
	15	B	B	C	A	A	B	B
	16	A	B	B	A	A	A	B
	17	A	B	C	A	A	A	B
Comparative Examples	Ex1	A	A	B	A	A	A	D
	10	B	B	C	A	A	C	D
	11	B	D	D	A	A	B	B

Table 8

		Ozone Resistance			NO _x Resistance		Cleaving Resistance	
		6 Hours	12 Hours	8 Hours	12 Hours	2 Weeks	1 Month	
Examples	18	A	B	A	A	B	B	
	Ex3	A	B	A	A	B	D	

5. I declare further that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity or the application of any patent issued thereon.

Date: August 20, 2007

Name: Yasuhiko Oki